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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,284	12/26/2000	Gene R. Anderson	1613370-0005	5815

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WHITE & CASE LLP  
PATENT DEPARTMENT  
1155 AVENUE OF THE AMERICAS  
NEW YORK, NY 10036

EXAMINER
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VALENTIN, JUAN D

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/749,284

Applicant(s)

ANDERSON ET AL.

Examiner

Juan D Valentin II

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24,50-95 and 118-144 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24,50-95 and 118-144 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/29/03, 2/24/04, 11/14/2003, 10/27/03
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. Claims 1-4 are objected to because Applicant introduced language that is inconsistent with the terminology used throughout the specification. The term “binder” has not been introduced or defined within the originally filed specification. Applicant is asked to please amend the claims to read consistently with language provided within the originally filed application. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 71 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support for the claimed “air gap” in the Applicants originally filed specification. The only support found within the specification can be found in paragraphs 19, 96, 97, 98, 99, & 110 of the publication of Applicants originally filed disclosure (US 20020122637 A1), which teach that an optical adhesive is used to fill the “gap”. Even further, paragraph 98 teaches away from

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the use of an "air gap" citing that air has a lower refractive index therefore causing greater beam divergence per unit propagation length.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-24, 50-95, and 118-144 rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (USPN '996 B1, hereinafter Miura) in view of Simonis et al. (1Gb/s VCSEL, hereinafter Somonis).

#### **Claim 1**

Miura discloses an optoelectronic connector comprising an array of optoelectronic devices each having a first end (abstract). Miura discloses an array of optical elements each having a first end, the first end of an optical element being positioned relative to the first end of an optoelectronic device in such a manner that the optical element is optically aligned to the optoelectronic device (Fig. 1, ref. 26, and 10). Miura further discloses a binder disposed between the first end of the optoelectronic device and the first end of the optical element, so that the binder secures the first end of said optoelectronic device to the first end of the array of optical element (Fig. 1, ref. 26, 10 and 18, col. 5, lines 7-54).

Miura substantially teaches the claimed invention except that it fails to show an array of optical elements and an array of optoelectronic devices. Simonis shows that it is known to

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provide an array of optical elements and optoelectronic devices (pg. 3, paragraph 3) for an optical inter connect. It would have been obvious to someone of ordinary skill in the art to combine the device of Miura with the array of optical elements and optoelectronic devices of Simonis for the purposes of providing high bandwidth and high-density optical computing.

**Claims 2-24**

The dependant claims are all obvious and well known to someone of ordinary skill in the art. The reference of Miura in view of Simonis discloses gel like epoxy optical adhesives and a second adhesive surrounding the array of optical elements (Miura, col. 5, lines 7-41), it is obvious and well known in the art that an adhesive "binder" is a form of epoxy resin. It is obvious and well known to someone of ordinary skill in the art that the resin or epoxies used to encapsulate optical modules need to be insulators in order to prevent the flow of electricity through the module from dissipating through the encapsulated portion yet enable to flow freely through the module to the optical array devices. Miura in view of Simonis further disclose photodetectors and printed circuit boards (Simonis, pg. 3, third paragraph), oxide vertical cavity emitting lasers (VCSEL) (Simonis, abstract), use of ferrules, driver close to optical array (Simonis, Fig. 4), and optical elements disposed within the various interconnect configurations. It is obvious and well known to someone of ordinary skill in the art to use flexible printed circuit boards in optical modules. Miura in view of Simonis discloses the claimed invention except it fails to show a ferrule having a recess in it. It would have been obvious matter of design choice to someone of ordinary skill in the art to combine Miura in view of Simonis with a recess in order to save space. Miura in view of Simonis further discloses a dam adapted to the mounting surface surrounding the array of optical elements (Miura, col. 10, lines 52-59, Fig. 24). It is

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obvious and well known to someone of ordinary skill in the art that the resin or epoxies used to encapsulate optical modules need to be insulators in order to prevent the flow of electricity through the module from dissipating through the encapsulated portion. Therefore, it is the position of the Office that the reference of Miura in view of Simonis reads upon the Applicants claimed limitations.

**Claim 50**

Miura discloses an optoelectronic connector comprising an array of optoelectronic devices (abstract). Miura discloses an array of optical elements, the array of optical elements positioned relative to the array of optoelectronic devices in such a manner that one or more optical elements is optically aligned to one or more optoelectronic devices (Fig. 1, ref. 26, and 10). Miura further discloses means for mechanically stabilizing the array of optical elements with respect to the position of the array of optoelectronic devices (Fig. 1, ref. 26, 10 and 18, col. 5, lines 7-54).

Miura substantially teaches the claimed invention except that it fails to show an array of optical elements and an array of optoelectronic devices. Simonis shows that it is known to provide an array of optical elements and optoelectronic devices (pg. 3, paragraph 3) for an optical inter connect. It would have been obvious to someone of ordinary skill in the art to combine the device of Miura with the array of optical elements and optoelectronic devices of Simonis for the purposes of providing high bandwidth and high-density optical computing.

**Claims 51-70**

The dependant claims are all obvious and well known to someone of ordinary skill in the art. The references of Miura in view of Simonis disclose wherein the means for mechanically

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stabilizing includes providing moisture or electrical shielding. (Miura, col. 5, lines 7-41), and further disclose wherein the means for mechanically stabilizing further includes means for means for encapsulating at least one electrical or opto-electronic component (Miura, col. 5, lines 7-10). It is obvious and well known to somebody of ordinary skill in the art at the time of the claimed invention to use an optical adhesive to mechanically stabilizing at least one optoelectronic device (Fig. 1, 10) to at least one optical element (Fig. 1, 22) for the purposes of maintaining optical alignment of the device and optical element as well as seal the optical system from outside contaminants. It is obvious and well known to somebody of ordinary skill in the art at the time of the claimed invention that a UV optical adhesive is a form of epoxy resin. It is obvious and well known to someone of ordinary skill in the art at the time of the claimed invention that the resin or epoxies used to encapsulate optical modules need to be attenuators and insulators in order to prevent the flow of electricity through the module from dissipating through the encapsulated portion yet enable to flow freely through the module to the optical array devices. Miura in view of Simonis further disclose photodetectors and printed circuit boards (Simonis, pg. 3, third paragraph), oxide vertical cavity emitting lasers (VCSEL) (Simonis, abstract), use of ferrules, driver close to optical array (Simonis, Fig. 4), and optical elements disposed within the various interconnect configurations. It is obvious and well known to someone of ordinary skill in the art to use flexible printed circuit boards in optical modules. Miura in view of Simonis discloses the claimed invention except it fails to show a ferrule having a recess in it. It would have been obvious matter of design choice to someone of ordinary skill in the art to combine Miura in view of Simonis with a recess in order to save space. Miura in view of Simonis further discloses a dam adapted to the mounting surface surrounding the array of optical elements

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(Miura, col. 10, lines 52-59, Fig. 24). Therefore, it is the position of the Office that the reference of Miura in view of Simonis reads upon the Applicants claimed limitations.

**Claim 71**

Miura discloses an optoelectronic connector comprising an array of optoelectronic devices each having a first end (abstract). Miura discloses an array of optical elements each having a first end, the first end of an optical element being positioned relative to the first end of an optoelectronic device in such a manner that the optical element is optically aligned to the optoelectronic device with an air gap between the first end of the optoelectronic device and the first end of the optical element (Fig. 1, ref. 26, 10 and 18, col. 5, lines 30-41). It can be seen in Fig. 4a that Miura discloses an air gap between the device 10 and a sleeve 22 prior to the insertion of the adhesive 18.

Miura substantially teaches the claimed invention except that it fails to show an array of optical elements and an array of optoelectronic devices. Simonis shows that it is known to provide an array of optical elements and optoelectronic devices (pg. 3, paragraph 3) for an optical inter connect. It would have been obvious to someone of ordinary skill in the art to combine the device of Miura with the array of optical elements and optoelectronic devices of Simonis for the purposes of providing high bandwidth and high-density optical computing.

**Claims 71-95**

The dependant claims are all obvious and well known to someone of ordinary skill in the art. The reference of Miura in view of Simonis discloses solidifying material capable of providing moisture or electrical shielding. (Miura, col. 5, lines 7-41), it is obvious and well known in the art that a UV optical adhesive is a form of epoxy resin. It is obvious and well



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known to someone of ordinary skill in the art that the resin or epoxies used to encapsulate optical modules need to be insulators in order to prevent the flow of electricity through the module from dissipating through the encapsulated portion yet enable to flow freely through the module to the optical array devices. It is obvious and well known in the art that when aligning optical devices to any form of waveguide without physically connecting them, a gap will be created in order to maximize coupling efficiencies within the optical system. Miura in view of Simonis further disclose photodetectors and printed circuit boards (Simonis, pg. 3, third paragraph), oxide vertical cavity emitting lasers (VCSEL) (Simonis, abstract), use of ferrules, driver close to optical array (Simonis, Fig. 4), and optical elements disposed within the various interconnect configurations. It is obvious and well known to someone of ordinary skill in the art to use flexible printed circuit boards in optical modules. Miura in view of Simonis discloses the claimed invention except it fails to show a ferrule having a recess in it. It would have been obvious matter of design choice to someone of ordinary skill in the art to combine Miura in view of Simonis with a recess in order to save space. Miura in view of Simonis further discloses a dam adapted to the mounting surface surrounding the array of optical elements (Miura, col. 10, lines 52-59, Fig. 24). Therefore, it is the position of the Office that the reference of Miura in view of Simonis reads upon the Applicants claimed limitations. Examiner points to col. 5, lines 18-20 wherein the substrate 6 has a vertical portion 8 in abutment with the front end 22a of the sleeve 22 for determining positional relation (gap) to the optical element 10 and further to col. 5, lines 58-64 where Miura discloses a substrate (silicon) used for mounting the optical element 10 to a lead frame 4. Lastly, it is noted that in lines 28-29 on page 16 of Applicants specification, Applicants disclose the spacer "may be composed of silicon material". It is the position of

Examiner that the vertical portion 8 of the silicon substrate disclosed by Miura reads on the Applicants claimed spacer limitation.

**Claim 118**

Miura discloses an optoelectronic connector comprising an array of optoelectronic devices each having a first end (abstract). Miura discloses an array of optical elements each having a first end, the first end of an optical element positioned relative to the first end of an optoelectronic device in such a manner that said optical element is optically aligned to said optoelectronic device (Fig. 1, ref. 26, and 10). Miura further discloses a spacer (sleeve) having a first surface and a second surface, wherein the first surface of the spacer is coupled to a mounting surface and the second surface of the spacer is coupled to the optoelectronic devices (Fig. 1, ref. 26, 10 and 18, col. 5, lines 7-54). Examiner points to col. 5, lines 18-20 wherein the substrate 6 has a vertical portion 8 in abutment with the front end 22a of the sleeve 22 for determining positional relation (gap) to the optical element 10 and further to col. 5, lines 58-64 where Miura discloses a substrate (silicon) used for mounting the optical element 10 to a lead frame 4 (mounting surface). Lastly, it is noted that in lines 28-29 on page 16 of Applicants specification, Applicants disclose the spacer “may be composed of silicon material”. It is the position of Examiner that the vertical portion 8 of the silicon substrate disclosed by Miura reads on the Applicants claimed spacer limitation.

Miura substantially teaches the claimed invention except that it fails to show an array of optical elements and an array of optoelectronic devices. Simonis shows that it is known to provide an array of optical elements and optoelectronic devices (pg. 3, paragraph 3) for an optical inter connect. It would have been obvious to someone of ordinary skill in the art to

combine the device of Miura with the array of optical elements and optoelectronic devices of Simonis for the purposes of providing high bandwidth and high-density optical computing.

**Claims 119-144**

The dependant claims are all obvious and well known to someone of ordinary skill in the art. The reference of Miura in view of Simonis discloses gel like epoxy optical adhesives and a second adhesive surrounding the array of optical elements and part of the spacer (Miura, col. 5, lines 7-41), it is obvious and well known in the art that a UV optical adhesive is a form of epoxy resin. It is obvious and well known to someone of ordinary skill in the art that the resin or epoxies used to encapsulate optical modules need to be insulators in order to prevent the flow of electricity through the module from dissipating through the encapsulated portion yet enable to flow freely through the module to the optical array devices. It is obvious and well known in the art that when aligning optical devices to any form of waveguide without physically connecting them, a gap will be created in order to maximize coupling efficiencies within the optical system. Miura in view of Simonis further disclose photodetectors and printed circuit boards (Simonis, pg. 3, third paragraph), oxide vertical cavity emitting lasers (VCSEL) (Simonis, abstract), use of ferrules, driver close to optical array (Simonis, Fig. 4), and optical elements disposed within the various interconnect configurations. It is obvious and well known to someone of ordinary skill in the art to use flexible printed circuit boards in optical modules. Miura in view of Simonis discloses the claimed invention except it fails to show a ferrule having a recess in it. It would have been obvious matter of design choice to someone of ordinary skill in the art to combine Miura in view of Simonis with a recess in order to save space. Miura in view of Simonis further discloses a dam adapted to the mounting surface surrounding the array of optical elements

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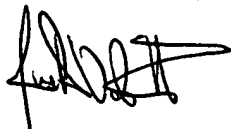
(Miura, col. 10, lines 52-59, Fig. 24). Therefore, it is the position of the Office that the reference of Miura in view of Simonis reads upon the Applicants claimed limitations.

***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan D Valentin II whose telephone number is (571) 272-2433. The examiner can normally be reached on M-Th., Every other Fr..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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July 25, 2004



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